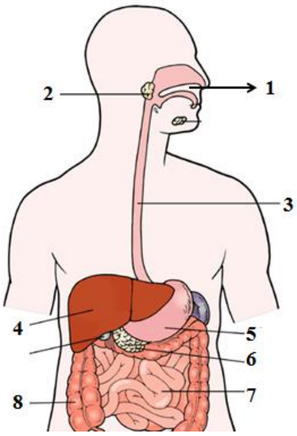
WORKSHEET - 3
NUTRITION IN ANIMALS

ANALYTICAL MCQS

(1) Paramecium is a ciliated protozoan. Its mode of nutrition is __________
(A) Autotrophic (B) Holozoic (C) Saprophytic (D) Parasitic

(2) Saliva is antiseptic in nature because
(A) It contains a hormone having antibiotic like property
(B) It contains a chemical that inhibits growth of bacteria
(C) It contains an enzyme called lysosome
(D) It contains lysozyme, containing many hydrolytic enzymes

(3) In the given diagram of digestive system, identify the structure that is related to the initial digestion of starch?



(A) 1 (B) 2 (C) 4 (D) 5

(4) Match the following and select the correct option:

	Column-I		Column-II
I	Gastric juice	P	Yellow colored gland present behind the stomach
II	Pancreatic juice	Q	Lobed reddish-brown colored largest gland of the body
III	Liver	R	Contains enzymes for the complete digestion of peptides into amino acids
IV	Intestinal juice	S	Contains acids and enzymes for digestion of proteins

(A) I-Q, II-P, III-R, IV-S (B) I-Q, II-P, III-S, IV-R
(C) I-S, II-P, III-Q, IV-R (D) I-Q, II-S, III-P, IV-R

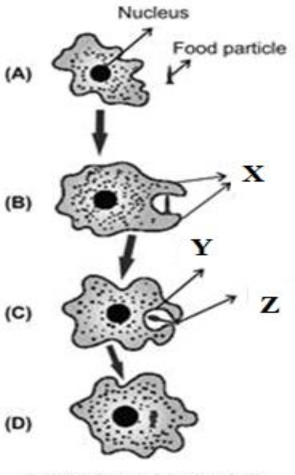
(5) Identify the wrongly given information from the following lines.
"Pancreas is a red-coloured gland present just behind the stomach. It secretes pancreatic juice. Pancreatic duct carries pancreatic juice to small intestine. Pancreatic juice contains enzymes that digest fats, carbohydrates and proteins."
(A) Digestion of fats (B) Digestion of proteins
(C) Digestion of carbohydrates (D) Colour of pancreas

(6) All of the following statements are true about the digestive EXCEPT
(A) The stomach is separated from the small intestine by the pyloric sphincter.
(B) Chyme is a mixture of food and digestive juices that is produced in the stomach.
(C) In the small intestine, chyme mixes with bile, which emulsifies fats.
(D) Food enters the large intestine before the small intestine.

CASE STUDY MCQS

I) Food remains in the mouth for a short time but action of salivary amylase continues for further 15-30 minutes till gastric juice mixes with food in the stomach.
Why do you think it stops after the food gets mixed with gastric juice?
(A) It does not react with gastric juice
(B) Gastric juice is highly alkaline
(C) Gastric juice is highly acidic while salivary amylase needs pH 6.8 to work
(D) Salivary amylase works in slightly acidic medium only

II) **Directions:** Given is the representation of mode of nutrition in Amoeba.



(Nutrition in Amoeba)

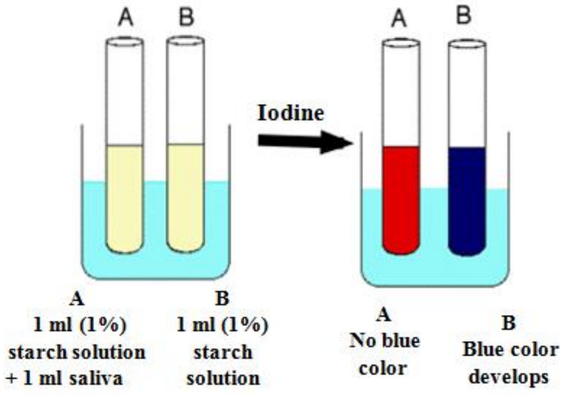
(1) Study the given figure and identify X, Y and Z

	X	Y	Z
(A)	Food cup	Food vacuole	Residual body
(B)	Food cup	Food particle	Pseudopodia
(C)	Pseudopodia	Food material	Food vacuole
(D)	Pseudopodia	Food vacuole	Food particle

(2) What is the function of Y?
(A) Helps in formation of pseudopodia to engulf food particle
(B) Helps in production of energy, growth repair and storage
(C) Serves as a temporary stomach secreting digestive juices
(D) Helps in absorption of digested food in various metabolic reaction

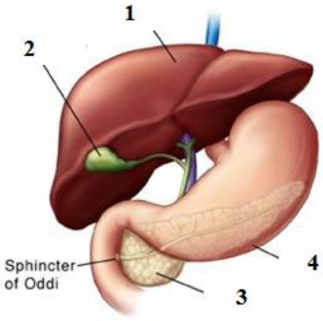
(3) Which of the following structures help in ingestion?
(A) X (B) Y (C) Both Y and Z (D) All of the above

III) Study the given experiment regarding starch test. No blue color development in tube A indicates?



(A) The presence of starch in tube B gives blue colored reaction
(B) Saliva contains a substance that decolorizes iodine
(C) Starch in tube B did not react with iodine
(D) All of the starch in tube A is digested by salivary amylase

IV) Study the given diagram and answer the following questions:



(1) The function of structure labeled as 1 is
(A) Produces bile juice
(B) Emulsification of fats
(C) Secretes intestinal juice
(D) Stores and secretes bile

(2) Digestion of which of the following is affected if the structure 2 is removed?
(A) Digestion of protein is affected
(B) Fat digestion cannot occur
(C) Carbohydrate cannot be completely digested
(D) Digestion of none of the component is affected

(3) Which of the following regarding the function of HCl in stomach is true?
(A) Creates acidic medium for the activity of Pepsin
(B) Helps to convert inactive prorenin into renin
(C) Kills bacteria present in food
(D) All of the above

(4) Given are few sentences regarding digestion. Identify which of them are true?
i. There is no digestive as well as mucus glands in oesophagus
ii. Large intestine is the site of complete digestion of food
iii. Gall bladder present below the left lobe of liver stores and secretes bile
iv. Emulsification decreases the surface area for digestion of fat by lipase
(A) i and iv
(B) ii and iv
(C) All of the above
(D) None of the above

(5) State whether the given statements are TRUE or FALSE:
Stomach is a thick, muscular J-shaped sac present on the right side of upper part of abdomen
(A) True (B) False

V) Read the passage given below and answer the following questions?

Chemical digestion is the biochemical process in which macromolecules in food are changed into smaller molecules that can be absorbed into body fluids and transported to cells throughout the body. Substances in food that must be chemically digested include carbohydrates, proteins, lipids, and nucleic acids. Carbohydrates must be broken down into simple sugars, proteins into amino acids, lipids into fatty acids and glycerol, and nucleic acids into nitrogen bases and sugars. Some chemical digestion takes place in the mouth and stomach, but most of it occurs in the first part of the small intestine (duodenum).

(1) What are the macromolecules mentioned in the passage?
(A) Carbohydrates (B) Proteins, nucleic acids
(C) Lipids (D) All of these

(2) Where does maximum chemical digestion take place?
(A) Mouth (B) Mouth, stomach
(C) Large intestine only (D) Duodenum

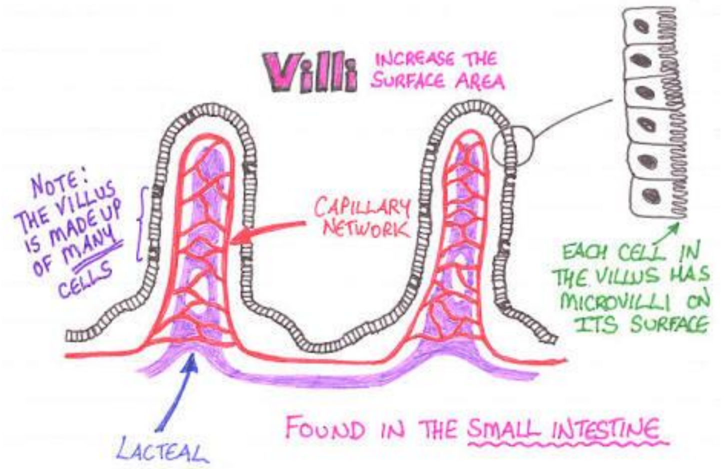
(3) Which is true among these statements?
(A) Lipids are broken down to fatty acids.
(B) Nucleic acids form sugars on digestion
(C) This type of digestion is a physical process
(D) This type of digestion facilitates nutrient absorption and transportation.

(4) Which substances in food do not get chemically digested?
(A) Nucleic acids (B) Carbohydrates
(C) Fiber (D) Proteins

(5) Find the incorrect match:

Digestive Enzyme	**Substrate**
(A) Amylase	i) Simple sugars
(B) Pepsin	ii) Proteins
(C) Trypsin	iii) Proteins
(D) Lipase	iv) Lipids

VI) Following are the salient adaptations of villi that make them good absorbers:


Villi
INCREASE THE SURFACE AREA
NOTE: THE VILLUS IS MADE UP OF MANY CELLS
CAPILLARY NETWORK
EACH CELL IN THE VILLUS HAS MICROVILLI ON ITS SURFACE
LACTEAL
FOUND IN THE SMALL INTESTINE

(1) State whether following statements are true or false:

i) Single-cell layer feature of villi increase surface area of absorption
(A) True (B) False

ii) Villi are found in small intestine only
(A)True (B) False

(2) Which of the following is not true of villi?
(A) Villi have rich network of blood capillaries.
(B) Villi have impermeable membranes.
(C) Villi are single cell thick.
(D) Presence of brush border (microvilli) membranes

VII) A person had roti and dal for his lunch. These are the changes occurring during its passage through the alimentary canal.

a) Roti and dal is chewed finely changing the food to semisolid paste and mixed with saliva.
Starch → Maltose

b) The stomach has HCl in it. The churned food is mixed with the HCl.

c) In stomach partial digestion of protein takes place. The following reaction takes place in stomach
Protein + pepsin → Peptones + Proteoses

d) Stomach is followed by small intestine. The pancreas releases pancreatic juice on the way. The pancreatic juice contains pancreatic amylase.
The pancreatic amylase converts polysaccharides into disaccharides. This is processing of carbohydrates present in the roti, i.e.
Polysaccharides (starch) $\xrightarrow{Amylase}$ Disaccharides

e) Intestinal juice contains various enzymes which help in digestion of all the nutrients.

f) After all the nutrients are converted into simple substances, these are absorbed by small intestine walls.

g) The undigested, unabsorbed substances called faeces enters into the caecum of the large intestine and finally to rectum.

(1) Name the enzyme missing in **step a**
(A) Pepsin (B) Amylase (C) Trypsin (D) Erepsin

(2) What is the churned food called when it enters small intestine?
(A) Chyle (B) Micelle (C) Chyme (D) Bolus

(3) Name the process that pushes the food along the alimentary canal.
(A) Muscular contractions (B) Antiperistalsis
(C) Regurgitation (D) Peristalsis

(4) Action of which gland is missing in this pathway?
(A) Oesophagus (B) Salivary gland
(C) Liver (D) Appendix

(5) Which other pancreatic enzymes takes part in partial digestion in small intestine?
(A) Pepsin (B)Trypsin (C) Lipase (D) B and C

ASSERTION REASON MCQS

Directions: In the following questions, a statement of assertion is followed by a statement of reason.
Mark the correct choice as:
(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
(c) If Assertion is true but Reason is false.
(d) If both Assertion and Reason are false.
(e) If assertion is false but reason is true.

(1) Assertion: Bile from the liver delivered to the stomach.
Reason: Majority of fat digestion takes place here.

(2) Assertion: The process of mechanical digestion continues in the stomach.
Reason: This muscular organ churns and mixes the food it contains.

(3) Assertion: The large intestine is the largest part of the alimentary canal.
Reason: Tiger has a shorter small intestine, than herbivores.

(4) Assertion: Pancreatic juice digests starch, proteins and fats.
Reason: Pancreatic juice contains digestive enzymes like pancreatic amylase, trypsin and lipase.

(5) Assertion: The inner lining of the small intestine has numerous finger-like projections called villi.
Reason: The villi increase the surface area for absorption.

(6) Assertion: Digested fats are absorbed in lacteals of villi.
Reason: These molecules cannot directly enter the blood capillary because of their large size so they enter lymphatic vessels

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